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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/621,901	07/16/2003	Kevin S. Brandt	FC-8-C3	3345

7590 09/16/2005

Heska Corporation
Intellectual Property Dept
1613 Prospect Parkway
Fort Collins, CO 80525

EXAMINER	
VOGEL, NANCY S	
ART UNIT	**PAPER NUMBER**
1636	

DATE MAILED: 09/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/621,901	BRANDT ET AL.	
	Examiner	Art Unit	
	Nancy T. Vogel	1636	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 June 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,6-8 and 18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 2, 6-8, and 18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: Sequence alignment

DETAILED ACTION

Claims 1, 2, 6-8 and 18 are pending.

Claim Rejections - 35 USC § 101

Claim Rejections - 35 USC § 112

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 2, 6-8 and 18 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility.

This rejection is maintained essentially for the reasons of record set forth in the previous Office action, mailed 3/9/05, in slightly modified form.

The instant application discloses that the utility of the instantly claimed products is for eliciting an immune response, or as a vaccine, in order to protect an animal from flea infestation (see page 49, lines 23-24), and further, that in order to do so, "a therapeutic composition of the present invention is administered to the animal in an effective manner such that the composition is capable of protecting that animal from flea infestation". The specification further discloses that this protection would occur when the therapeutic composition of the present invention is introduced into the animal, said animal produces antibodies in response to the administration, fleas feeding on the blood of said

animal ingest said antibodies, and the possible outcomes are "(a) reducing the viability of fleas that feed from the treated animal, (b) reducing the fecundity of female fleas that feed from the treated animal, (c) reducing the reproductive capacity of male fleas that feed from the treated animal, (d) reducing the viability of eggs laid by female fleas that feed from the treated animal, (e) altering the blood feeding behavior of fleas that feed from the treated animal (e.g., fleas take up less volume per feeding or feed less frequently), (f) reducing the viability of flea larvae, for example due to the feeding of larvae from feces of fleas that feed from the treated animal, (g) altering the development of flea larvae (e.g., by decreasing feeding behavior, inhibiting growth, inhibiting (e.g., slowing or blocking) molting, and/or otherwise inhibiting maturation to adults), and/or (h) altering or decreasing the ability of fleas or flea larvae to digest a blood meal." (page 66-67 of the specification). However, in order for such outcomes to actually occur, the animal would have to respond to administration of the nucleic acid claimed, or the protein encoded by said nucleic acid, by producing antibodies in sufficient quantities, and of effective specificity, i.e. the binding of the antibodies to the HMT protein in the fleas that ingested the blood or feces, would have to have the effects listed above. Applicants have provided no evidence in the specification that such results are the outcome of administering the claimed nucleic acid, or vaccines comprising said nucleic acid, to an animal. The mere ability of a particular protein to elicit an immune response, would not necessarily yield the result of preventing flea infestation, or the death or impairment of a flea which then feeds on the animal and perhaps ingests said

antibodies. A substantial utility does not include those utilities that require or constitute carrying out further research to identify or reasonably confirm a "real world" context of use.

Further utilities listed in the specification are also found not substantial and specific. For instance, the specification discloses that "once identified, these genes are further characterized and specific interference strategies can be identified. As such, flea HMT proteins and nucleic acids of the present invention have utility because they represent novel targets for anti-arthropod vaccines and chemotherapeutic drugs". However, the use of a disclosed nucleic acid for the purpose of further research and discovery, or as a "target" for such research, does not constitute a specific and substantial utility, since applicant's have not taught how to use the nucleic acid for such research. Such vague, general statements or statements of usefulness for further research are not acceptable as a utility.

Applicants have argued in their response filed 6/13/05, that the specification provides "several credible, specific and substantial uses for flea HMT nucleic acid molecules and proteins encoded by such nucleic acid molecules", for example "eliciting an immune response against flea HMT proteins, vaccines and other therapeutic uses" (page 3 of the response). However, for the reasons set forth above, it is maintained that the application has not provided a substantial and/or specific utility as required.

Claims 1, 2, 6-8 and 18 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

This rejection is maintained for the reasons made of record in the previous Office action, altered slightly to account for applicant's amendments to the claims.

Claims 1, 2, 6-8 and 18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1, 2, 6-8 and 18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claims are drawn to a nucleic acid having at least 95% sequence identity with a particularly disclosed sequence, SEQ ID NO: 26, wherein said nucleic acid molecules encode a flea HMT protein capable of eliciting an immune response against at least one epitope of a flea HMT protein, recombinant viruses comprising said nucleic acid molecule, recombinant cells comprising said nucleic

acid molecule, and a composition comprising an excipient and said nucleic acid molecule. Thus the claims are drawn to a genus of variants of the nucleic acid molecule whose sequence is shown in SEQ ID NO:26, encoding a protein capable of eliciting an immune response to any flea HMT protein.

To provide adequate written description and evidence of possession of a claimed genus, the specification must provide sufficient distinguishing identifying characteristics of the genus. The factors to be considered include disclosure of complete of partial structure, physical and/or chemical properties, functional characteristics, structure/function correlation, methods of making the claimed product, or any combination thereof. In this case, the only factor present in the claims is a partial structure in the form of a recitation of percent identity, and a requirement that the encoded protein is "capable of eliciting an immune response against at least one epitope of a flea HMT protein". There is no identification of any particular portion of the structure that must be conserved in order to have this capability. There is no disclosure of the structures in the encoded protein which would be required to supply this capability, and there is no disclosure that the encoded protein is a member of a well studied family of proteins, or even whether it possesses homology to any known proteins. The activity or function of the protein, its cellular location, and the three dimensional structure of the encoded protein are not disclosed. There is no identification of regions or particular amino acids necessary to impute the ability to elicit an immune response. Accordingly, in the absence of sufficient recitation of distinguishing

identifying characteristics, the specification does not provide adequate written description of the claimed genus.

Vas-Cath V. Mahurkar, 19USPQ2d 1111, clearly states "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of *the invention*. The invention is, for purposes of the 'written description' inquiry, *whatever is now claimed.*" (See page 1117). The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is now claimed." (See *Vas-Cath* at page 1116). As discussed above, the skilled artisan cannot envision the detailed chemical structure of the encompassed genus of nucleic acids, and therefore conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method of isolation or identification. Adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method of isolating it. The compound itself is required. See *Fiers v. Revel*, 25USPQ2d 1601 at 1606 (CAFC 1993) and *Amgen Inc. v. Chugai Pharmaceutical Col. Ltd.,* 18USPQ2d 1016.

One cannot describe what one has not conceived. See *Fiddes v. Baird*, 30 USPQ2d 1481 at 1483. In *Fiddes*, claims directed to mammalian FGF's were found to be unpatentable due to lack of written description for that broad class. The specification provided only the bovine sequence.

Therefore, only isolated nucleic acid set forth in SEQ ID NO:26, but not the full breadth of the claims, meets the written description provision of 35 U.S.C.

112, first paragraph. Applicant is reminded that *Vas-Cath* makes clear that written description provision of 35 U.S.C. 112 is severable from its enablement provision (see page 1115).

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 2, 6-8 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, and by dependence, claims 2, 6-8 and 18, are vague and indefinite in the recitation of "capable of", since this phrase refers to a latent ability, and it is unknown whether the ability is expressed or observed in the invention.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 6-8, 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Brandt et al. (WO 00/61621) (the entire document is not being supplied since it is over 900 pages).

Brandt et al. disclose an isolated nucleic acid molecule having at least 95% identity with SEQ ID NO: 26 (see attached alignment, see claim 26, see SEQ ID NO:381, see Table II, page 34). The reference discloses recombinant virus comprising said nucleic acid, and compositions comprising an excipient and said nucleic acid (see page 91, attached).

Conclusion

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nancy T. Vogel whose telephone number is (571) 272-0780. The examiner can normally be reached on 7:00 - 3:30, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Irem Yucel, Ph.D. can be reached on (571) 272-0781. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

NANCY VOGEL, PH.D.
PATENT EXAMINER

Sequence alignment

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                    ||||||||||||||||||
Db        481 ATTCTGCCAAGAGCTGCA 498
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RESULT 3
AAC93886
ID AAC93886 standard; cDNA; 498 BP.
XX
AC AAC93886;
XX
DT 19-FEB-2001 (first entry)
XX
DE Cat flea hindgut and Malpighian tubule (HMT) cDNA, SEQ ID NO:381.
XX
KW Cat flea; hindgut and Malpighian tubule nucleic acid; HMT;
KW flea infestation; vaccine; antiparasitic; therapeutic target; diagnosis;
KW detection; ss.
XX
OS Ctenocephalides felis.
XX
PN WO200061621-A2.
XX
PD 19-OCT-2000.
XX
PF 07-APR-2000; 2000WO-US009437.
XX
PR 09-APR-1999; 99US-0128704P.
XX
PA (HESK-) HESKA CORP.
XX
PI Brandt KS, Gaines PJ, Stinchcomb DT, Wisnewski N;
XX
DR WPI; 2000-656323/63.
XX
PT Flea Malpighian tubule and head and nerve cord tissue derived nucleic
PT acids useful for the prevention, diagnosis and treatment of flea
PT infestations.
XX
PS Claim 26; Page 372; 964pp; English.
XX
CC The invention relates to novel cat flea (Ctenocephalides felis) nucleic
CC acids which are expressed in hindgut and Malpighian tubule (HMT) tissue
CC or head and nerve cord (HNC) tissue. The invention also relates to the
CC encoded proteins. The invention additionally encompasses expression
CC constructs, recombinant viruses and recombinant cells comprising the
CC nucleic acids of the invention, recombinant production of the proteins,
CC antibodies against the proteins, a method of identifying inhibitors of
CC the proteins, and compositions comprising the inhibitors for
CC administration to an animal. The nucleic acids, and the proteins they
CC encode may be used in the prevention, treatment and diagnosis of diseases
CC associated with flea infestations. For example, the nucleic acids may be
CC used to produce an HMT or HNC protein according to standard recombinant
CC DNA methodology by inserting the nucleic acids into a host cell and
CC culturing the cell to express the protein. The HMT and HNC nucleic acids
CC may also be used as DNA probes in diagnostic assays (e.g., PCR) to detect
CC and quantitate the presence of cat flea or other homologous nucleic acid
CC sequences in samples. They may also be used to study the expression and
CC function of the proteins and their role in metabolism. The HMT and HNC
CC proteins may be used as antigens in the production of specific
CC antibodies, and in assays to identify modulators (agonists and
CC antagonists) of HMT and/or HNC protein expression and activity. The anti-
CC HMT/HNC protein antibodies and antagonists may also be used to
CC downregulate protein expression and activity. The antibodies may also be
CC used as diagnostic agents for detecting the presence of flea polypeptides
CC in samples (e.g., by enzyme linked immunosorbent assay (ELISA)). The
CC present sequence represents a cat flea HMT cDNA of the invention
XX
SQ Sequence 498 BP; 147 A; 101 C; 105 G; 145 T; 0 U; 0 Other;

  Query Match   96.1%; Score 478.6; DB 3; Length 498;
  Best Local Similarity 98.8%; Pred. No. 1.3e-133;
  Matches 492; Conservative   0; Mismatches   5; Indels   1; Gaps   1;

```
Qy          1 GGCCCTGGACAAGATGCCCTTCGACTCACCACCGAATATGGAGCTGTCTACGATCAAAAT 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 GGCCCTGGACAAGATGCCCTTCGACTCACCACCGAATATGGAGCTGTCTACGATCAAAAT 60

Qy         61 GCCACCATTGAAGTTCTTAATAAACAGAAGAGGAAAACTTTGTGCCACACTGATGGCGAA 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 GCCACCATTGAAGTTCTTAATAAACAGAAGAGGAAAACTTTGTGCCACACTGATGGCGAA 120

Qy        121 GGAGTTGAATGCGAAACAGAAGAAGGGAGCATCGCACCTCAAATAATACTATTTGCTGCC 180
              ||||||||||||||||||||||||||||||||||||||||||||||||||||| ||||
Db        121 GGAGTTGAATGCGAAACAGAAGAAGGGAGCATCGCACCTCAAATAATACTATTTGTTGCC 180

Qy        181 CAATTAATTTCTGGAGTCGGTGGATCTTTATACTACACTTTAGGTGTATCCTATATGGAC 240
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        181 CAATTAATTTCTGGAGTCGGTGGATCTTTATACTACACTTTAGGTGTATCCTATATGGAC 240

Qy        241 GATAACACCAAAAAATCTAAAACACCAGCACTGATAAGTTTTTCTTATTTTCTTCGTATG 300
              |||||||||||||||||||||||||||||||| ||||||||||||||||||||||||||
Db        241 GATAACACCAAAAAATCTAAAACACCAGCACTGATGAGTTTTTCTTATTTTCTTCGTATG 300

Qy        301 CTCGGACCTGCAACCGGTTATGCCTTGGCTAGCGTCTGTCTAAAGTTCTACATTTCGCCA 360
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        301 CTCGGACCTGCAACCGGTTATGCCTTGGCTAGCGTCTGTCTAAAGTTCTACATTTCGCCA 360

Qy        361 ACGTTGACGCCAACAATTGATAATAATGATCCTAGATGGTTANGAGCATGGTGGTTAAGT 420
              |||||||||||||||||||||||||||||||||||||||||||| |||||||||||| ||
Db        361 ACGTTGACGCCAACAATTGATAATAATGATCCTAGATGGTTAGGAGCATGGTGGTTAGGT 420

Qy        421 TGGGTGATACTAGGATCAACTTTAATATTTTTTGCAACGTTGATTGGATTGTTTCCTAAA 480
              ||| ||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        421 TGGTTGATACTAGGATCAACTTTAATATTTTTTGCAACGTTGATTGGATTGTTTCCTAAA 480

Qy        481 ATTCTGCCAAGAGCTGCA 498
              | ||||||||||||||||
Db        481 A-TCTGCCAAGAGCTGCA 497
```

RESULT 4
ADL09993
ID ADL09993 standard; cDNA; 498 BP.
XX
AC ADL09993;
XX
DT 01-JUL-2004 (first entry)
XX
DE Cat flea hindgut and malpighian tubule (HMT) protein cDNA #410.
XX
KW Flea; head and nerve cord protein; HNC;
KW hindgut and malpighian tubule protein; HMT; flea infestation;
KW anti-arthropod vaccine; chemotherapeutic drug; insecticide; gene; ss;
KW cat flea.
XX
OS Ctenocephalides felis.
XX
PN US2004067516-A1.
XX
PD 08-APR-2004.
XX
PF 16-JUL-2003; 2003US-00621901.
XX
PR 22-JUL-2002; 2002US-0319414P.
XX
PA (BRAN/) BRANDT K S.
PA (GAIN/) GAINES P J.
PA (STIN/) STINCHCOMB D T.
PA (WISN/) WISNEWSKI N.
XX
PI Brandt KS, Gaines PJ, Stinchcomb DT, Wisnewski N;
XX
DR WPI; 2004-304579/28.
XX
PT Novel flea head and nerve cord protein and flea hindgut and malpighian
PT tubule protein, useful for reducing flea infestations.